

REMARKS

This Reply is in response to the Office Action mailed on November 16, 2007 in which claims the role 1, 2, 6-20 8, 30-36 and 40-52 were rejected. With this response, claims 2, 48 and 51 are canceled; claims 1, 20, 32, 40-43 and 47 are amended; and in which claims 53 is added. Claims 1, 6-28, 30-36 and 40-47, 49-50 and 52-53 are presented for reconsideration and allowance. Reinstatement of claims 3 and 5 which depend from claim 1 is also requested.

I. Objection to Claim 20

Section 1 objective to claim 20 by noting informalities. In response, claim 20 is amended to correct the noted that informalities.

II. Rejection of Claims 47-52 under 35 USC 102 (b) Based upon Gast

Sections 3-5 of the Office Action rejected claim 47-52 under 35 USC 102(b) as being anticipated by Gast et al. US Patent 6,076,915. Claims 48 and 51 are canceled. Claims 47, 49-50 and 52, as amended, overcome the rejection.

A. Claim 47

Claim 47 is amended to incorporate the limitations of former claim 48. Claim 47 and is further amended to recite that the first portion of image forming points comprise a first segment of a column of image forming points and wherein the second portion comprises a second segment of the column of image forming points on the first printhead. Thus, claim 47 recites a method wherein multiple segments of a single column of image forming points on a printhead are calibrated with respect to one another.

Gast fails to disclose a method wherein a first segment of a column of image forming points on a printhead are used to print a first reference image and wherein a second segment of the same column of image forming points on the printhead are used to print a diagnostic image at least partially overlaps the reference image. Accordingly, claim 47, as amended, overcomes the

rejection based upon Gast. Claims 49 and 50 are amended to depend from claim 47 and overcome the rejection for least the same reasons.

B. Claim 52

Claim 52 recites a method for calibrating one or more printheads. The method includes it turning a compensation value by printing a reference image and a diagnostic image each a plurality of times while a first printhead and one of the first printhead the second printhead are scanned across the medium at a plurality of different print speeds.

Gast fails to disclose printing a reference image and I diagnostic image each a plurality of times while the printhead or printheads are scanned across the medium and a plurality of different print speeds. In rejecting claim 52, the Office Action refers to column 6, line 52-62 of Gast and asserts that "the dashed lines are printed different timing and thus different printing speeds." (Office Action dated November 16, 2007; page 5) (Emphasis added).

However, this assertion lacks merit. Simply because the dashed lines are printed at different timing in no way means that the dashed lines are printed while the printheads are being scanned or moved across the printing medium at different speeds. Rather, the different timing simply means that as the printheads are moved or scanned across the medium, ink is ejected from the printhead at different points in time. The mere fact that ink is ejected at different points in time does not mean that the scanning of printhead itself changes speed. By way of analogy, a child riding a bike and throwing the Sunday morning paper onto the porches of different houses may throw the paper at different times for different houses all while he or she is riding his or her bike at a constant speed. Accordingly, the rejection of claim 52 should be withdrawn.

III. Rejection of claims 1, 2, 6-28, 30-36 and 40-46 under 35 USC 103(a) based upon Nishikori and Gast

Sections 7 -14 of the Office Action rejected claims 1, 2, 6-28, 30-36 and 40-46 under 35 USC 103(a) as being unpatentable over Nishikori et al. US Patent 6,832,825 in view of Gast US

Patent 6076915. Claim 2 is canceled with its limitations incorporated into claim 1. Claims 1, 6-28, 30-36 and 40-46, as amended, overcome the rejection based upon Nishikori and Ishibashi.

Claims 1, 32, 40, 41, 42 and 43 are directed to a method, a printing system, a computer-readable media, a printing system, a printing system and a method, respectively. Each of claims 1, 32, 40, 41, 42 and 43 recites printing a reference image using a first portion of image forming points of a printhead and printing a diagnostic image using a second portion of the image forming points of a printhead, wherein the reference image and the diagnostic image at least partially overlap. Each of such claims further recites that the reference image and the diagnostic image are printed using segments of the same column of image forming points on the printhead.

Neither Nishikori nor Gast, alone or in combination, disclose or suggest printing reference images using a first segment of a column of image forming points of a printhead and printing a diagnostic images using a second segment of the column of the image forming points of a printhead, wherein the reference images and the diagnostic images at least partially overlap. In contrast, Nishikori merely discloses a method for adjusting the amount of ink ejected by nozzles based upon the detected density of a pattern of printed patches. Gast is not directed to calibrating segments of a column of image forming points on a printhead.

In rejecting the claims based upon Nishikori and Gast, the Office Action acknowledges that Nishikori fails to disclose a reference image in a diagnostic image that at least partially overlap. (Office Action dated November 16, 2007; p. 7). As a result, the Office Action attempts to additionally rely upon Gast by asserting that:

it can be seen that, even if they have different structures, the Nishikori and Gast invention have similar outcomes except that in Gast the patterns overlap and are printed by different printing heads. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Nishikori et al. invention to include means for partially overlap in the reference image with the diagnostic image as taught by Gast the purpose of detecting an optical density in order to calibrate the printheads.

(Office Action dated November 16, 2007, p. 7).

However, this alleged motivation is without merit because (A) neither Nishikori and Ishibashi are not from analogous fields of art; (B) the motivation cited by the Office Action is not applicable to Nishikori AND (C) the alleged modification of Nishikori based upon Gast would destroy the principle of operation and the functioning of Nishikori.

A. Nishikori and Ishibashi are not from analogous fields of art.

Nishikori and Gast are not even remotely related to the same issues or the same problems. Nishikori has nothing to do with compensating for nozzle positional misalignments of printheads. In contrast, Nishikori is solely related to adjusting the amount of fluid ink ejected from the nozzles of a printhead. One of ordinary skill in the art looking to address adjusting the amount of fluid ink ejected from nozzles as in Nishikori would NOT look to Gast which addresses positional misalignments of inkjet printhead nozzles. Thus, it would not be obvious to modify Nishikori based upon Gast.

B. The motivation cited by the Office Action is not applicable to Nishikori.

The Office Action alleges that one of ordinary skill in the art would be led to modify Nishikori based upon Ishibashi "for the purpose of detecting an optical density in order to calibrate the printheads." However, this motivation is not applicable to Nishikori. Nowhere does Nishikori ever indicate that it would be desirable to calibrate its printheads.

C. The alleged modification of Nishikori based upon Gast would destroy the principle of operation and the intended functioning of Nishikori.

It is well settled law that THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE and THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE. (See MPEP 2143.01). In the present case, the Office Action proposes to modify Nishikori based upon Ishibashi such that the patches overlap.

However, such a modification would destroy the printable operation and intended functioning of Nishikori. Nishikori uses distinct nozzle blocks to print distinct patches that do not overlap so that the optical densities of the distinct patches may be compared and used to adjust the relative amounts of ink ejected by the nozzle blocks. To alternatively overlap the patches would seemingly prevent Nishikori from distinguishing between patches from different nozzle blocks and would thus prevent Nishikori from achieving its objective of adjusting the relative amount of ink ejected by the nozzle blocks. Such a modification would render Nishikori unsatisfactory for its intended purpose and would change the entire principle of operation of Nishikori. Accordingly, the rejection of claims 1, 32, 40, 41, 42 and 43 should be withdrawn. The rejection of claims 6-8, 18, 22-28, 30-31, 33- 36 and 44 -46, which depend from claims 1, 32, 40, 41, 42 and 43 should be withdrawn for at least the same reasons.

IV. Added Claims

With this response, claim 53 is added. Claim 53 is believed to be patentably distinct over the prior art of record.

Claim 53 constitutes former claim 18 re written in independent form including all of the limitations of base claim 1. Claim 18 recites a method for calibrating one or more printheads. Claim 53 recites that the first portion and the second portion of image forming points used to print the reference image and the diagnostic image comprise identical portions of a printhead. Claim 53 further recites that the first portion is printed during overall movement of the printhead in a forward direction and that the second portion is printed during overall movement of the print head in a reverse direction. Thus, claim 53 is directed to a method wherein the reference image is printed with the image forming points while the printheads moved in a forward direction and wherein the diagnostic image that at least partially overlaps a reference image is printed with the same image forming points while the same print is moved in a reverse direction.

Neither Gast nor Nishikori, alone or in combination, disclose or suggest a method wherein the reference image is printed with the image forming points while the printheads moved

in a forward direction and wherein the diagnostic image that at least partially overlaps a reference image is printed with the same image forming points while the same print is moved in a reverse direction.

In rejecting former claim 18, the Office Action attempted to rely upon Nishikori. However, as noted above, as acknowledged by the Office Action, Nishikori does not disclose overlapping of a reference image in a diagnostic image. Moreover, as noted above, it would not be obvious to modify Nishikori to overlap a reference image and a diagnostic image. Furthermore, Gast does not appear to disclose printing overlapping reference image and diagnostic image using the identical image forming points of a printhead. Accordingly, claim 53 is presented for consideration and allowance.

V. Conclusion

Claims 1, 6-28, 30-36 and 40-47, 49-50 and 52-53 are presented for reconsideration and allowance. Reinstatement of claims 3 and 5 which depend from claim 1 is also requested.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17; or credit any overpayment, to Deposit Account No. 08-2025. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 08-2025. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 08-2025.

Respectfully submitted,

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